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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,676	11/12/2003	Ofir Zohar	ASSIA 20.741	8317

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EXAMINER
MCFADDEN, MICHAEL B

ART UNIT	PAPER NUMBER
2188	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/706,676	ZOHAR ET AL.
	Examiner	Art Unit	
	Michael B. McFadden	2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>18 December 2007</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-30</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-30</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>12 November 2003</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All . b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Request for Continued Examination

1.   A request for continued examination under 37 CFR 1.114, including the fee set

forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this

application is eligible for continued examination under 37 CFR 1.114, and the fee set

forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action

has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 18

December 2007 has been entered.

Status of Claims

2.   Claims 1-30 are pending in the Application.

Response to Amendment

3.   Applicant's arguments filed on 18 December 2007 have been fully considered but

they are not persuasive.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed
> or described as set forth in section 102 of this title, if the differences between the
> subject matter sought to be patented and the prior art are such that the subject
> matter as a whole would have been obvious at the time the invention was made

to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Sharma et al. ((US Patent No. 6,055,605) herein after Sharma).

6.   **Regarding Claims 1, 2, 3, 10, 11 and 12,** Sharma discloses a storage system,

comprising: a data storage logical unit (LUs) **(Sharma: Figure 3, Element 150)**

comprising respective physical media, the one or more LUs being adapted to receive

commands and responsive to the commands to store and recall data; and a plurality of

ports, each port being adapted to maintain a plurality of LU command queues **(Sharma:**

Figure 3, Elements 312/322, 314/324, 316/326, and 318/328) each of the plurality of

LU command queues corresponding to the LUs, such that upon receiving a command

directed to one of the LUs, the port places the received command in the respective LU

command queue, converts the received command to one or more converted commands

at least some of which are directed to the physical media of the one of the LUs, and

conveys the at least some converted commands to the physical media in an order

determined by the respective LU command queue. **(Sharma: Column 8, Lines 16-20.)**

Sharma must inherently convert the commands in some fashion. Commands

stored in a command queue must be converted at the very least at the control

line. The opcode will be converted into bits that will be used to perform the

requested command.

7.   Sharma fails to disclose a plurality of data storage logical units comprising a

plurality of physical media and each port having multiple command queues

corresponding to a respective one of the LUs. **However, Sharma shows a logical unit with each port having a command queue that corresponds to that logical unit. Duplicating the logical unit and media that comprises the unit would require duplication of the command queue for the duplicated logical unit providing mere duplication of the logical unit and command queue parts of Sharma. Therefore, a plurality of data storage logical units and each port having multiple command queues corresponding to a respective one of the LUs is a mere duplication of parts and holds no patentable significance. *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).**

8.   **Regarding Claims 5 and 14,** Sharma discloses the storage system according to claim 1, wherein each of the ports comprises a respective central processing unit (CPU) which operates each of the ports substantially independently. **(Sharma: Figure 3, Elements 202, 204, 206, and 208. and Column 8, Lines 12-16.)**

9.   **Regarding Claims 6 and 15,** Sharma discloses the storage system according to claim 1, wherein the command is comprised in one of one or more strings of commands, each command of each string being directed via one of the ports to a respective one of the LUs **(Sharma: Column 8, Lines 16-20)**, and comprising a coupling **(Sharma: Figure 3, Element 300)** which: receives the commands comprised in the one or more strings, sorts the commands according to the ports via which the commands are directed, and conveys the commands to the ports to which the commands are directed. **(Sharma: Column 8, Lines 12-28.)**

10.   **Regarding Claims 7, 8, 16 and 17,** Sharma discloses the storage system

according to claim 1, wherein the received command comprises a write command to

store a data string from a host to the plurality of the physical media, wherein the one or

more converted commands comprise instructions to the host to convey the data string

to the physical media via the port, and wherein the port is adapted to convey the

instructions to the host and wherein the received command comprises a read command

from a host to read a data string from the plurality of the physical media, and wherein

the one or more converted commands comprise instructions to convey the data string

via the port to the host. **(Sharma: Column 8, Lines 12-28.)**

11.   **Regarding Claims 9 and 18,** Sharma discloses the storage system according to

claim 1, wherein the plurality of the physical media comprise the data, and wherein the

port is adapted to track changes of location of the data within the plurality of the physical

media. **(Figure 3, Element 180. In order to maintain coherency the system must**

also be keeping track of where the data is located.)

12.   **Regarding Claim 19,** Sharma discloses wherein each port uses at least one

table to convert logical data in the received command to data suitable for the respective

physical media to which the command is directed. **It would be apparent to one of**

ordinary skill in the art that in converting opcode instructions to the proper

control line output a conversion table is used.

13.   **Regarding Claim 20,** Sharma discloses wherein each port uses one or more

functions to convert logical data in the received command to the data suitable for the

respective physical media. **It would be apparent to one of ordinary skill in the art**

that in order to convert the opcode instructions logic functions must be present in the circuitry.

14.   **Regarding Claims 4 and 13,** Sharma fails to disclose the storage system according to claim 1, wherein the command comprises a request according to a small computer system interface (SCSI) protocol, and wherein the storage system is operative according to the SCSI protocol. **However, the Office takes Official Notice that it would have been obvious for one of ordinary skill in the art. The motivation for doing so would have been that the technology is well known in the art and therefore be efficient and time saving to implement.**

15.   **Regarding Claims 21 and 22,** Sharma fails to disclose wherein at least one of the converted commands directed to the physical media is first sent to a fast access time memory acting as buffer, said fast access time memory being adapted to redirect the converted command to the respective physical media. **However, the Office takes Official Notice that it would have been obvious for one of ordinary skill in the art. The motivation for doing so would have been that the technology is well known in the art and therefore be efficient and time saving to implement.**

16.   **Regarding Claims 23 and 24,** Sharma fails to disclose wherein the physical media which comprise the plurality of data storage logical units (LUs) are slow access time non-volatile physical media. **However, the Office takes Official Notice that it would have been obvious for one of ordinary skill in the art. The motivation for doing so would have been that the technology is well known in the art and therefore be efficient and time saving to implement.**

17.   **Regarding Claims 25 and 26,** Sharma discloses wherein a particular physical media which comprise each of the plurality of data storage logical units (LUs) changes over time. **However, the Office takes Official Notice that it would have been obvious for one of ordinary skill in the art. The motivation for doing so would have been that the technology is well known in the art and therefore be efficient and time saving to implement.**

18.   **Regarding Claims 27 and 28,** Sharma fails to disclose wherein each data storage logical unit (LU) is distributed across a plural subset of the plurality of the physical media. **However, the Office takes Official Notice that it would have been obvious for one of ordinary skill in the art. The motivation for doing so would have been that the technology is well known in the art and therefore be efficient and time saving to implement.**

19.   **Regarding Claims 29 and 30,** Sharma fails to disclose wherein the port converting the received command to the one or more converted commands includes converting a logical block address and a length of a data string included in the received command; and wherein the converting operation performed by the port also determines if the command is one of a read command and a write command. **However, the Office takes Official Notice that it would have been obvious for one of ordinary skill in the art. The motivation for doing so would have been that the technology is well known in the art and therefore be efficient and time saving to implement.**

Response to Arguments

20.   Applicant's arguments filed on 18 December 2007 have been fully considered but they are not persuasive.

21.   Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

22.   **Regarding Claims 4, 13, 21-26,** the Applicant has failed to adequately traverse the Office's assertion of Official Notice. To adequately traverse such a finding, an applicant must specifically point out the supposed errors in the examiner's action, which would include stating why the noticed fact is not considered to be common knowledge or well-known in the art. Therefore, the well-known in the art statement is taken to be admitted prior art.

23.   Regarding all other Claims not specifically traversed above and whose rejections were upheld, the Applicant contends that the listed claims are allowable by virtue of their dependence on other allowable claims. As this dependence is the sole rationale put forth for the allowability of said dependent claims, the Applicant is directed to the Examiner's remarks above. Additionally, any other arguments the Applicant made that were not specifically addressed in this Office Action appeared to directly rely on an argument presented elsewhere in the Applicant's response that was traversed, rendered moot or found persuasive above.

Conclusion

24.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Michael B. McFadden whose telephone number is

(571)272-8013. The examiner can normally be reached on Monday-Friday 8:30 - 5:00.

.   If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Sam Sough can be reached on (571)272-6799. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

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Business Center (EBC) at 866-217-9197 (toll-free).

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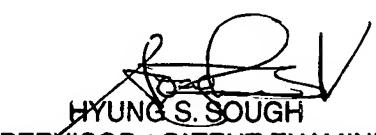
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